

Final Report, Office of Naval Research
Grant N00014-97-1-0076

Research Described in Proposals Entitled
BASS Measurements of Bottom Currents and Stress in the North Sea

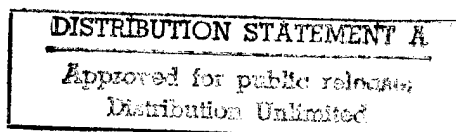
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This is the final report covering ONR grant N00014-97-1-0076 titled "BASS Measurements of Bottom Currents and Stress in the North Sea". Two deployments of a Benthic Acoustic Stress Sensor (BASS) tripod were successfully made off Scheveningen, The Netherlands, in support of the NATO mine burial exercise. The spring systems test was a deployment from 1 May 1997 to 12 May 1997. The November deployment lasted from 11 November 1997 to 1 December 1997. The BASS tripod measured current, turbulence, waves and stress at three heights above bottom, temperature at seven heights, optical backscatter at five heights, and conductivity and pressure at one height above bottom.

Both deployments were successful. The May deployment sampled all these variables every 0.34 seconds for the entire duration. The November deployment sampled every 0.43 seconds, slightly slower than in May, so that the 340 MB hard-disk data logger would not fill up before the end of the deployment.

Data from each deployment along with .m files (for the Matlab environment) to process the data into meaningful engineering units were recorded on CD-ROMs and sent along with a data report to Richard Bennett of Seaprobe Inc. and Carlos Mercado of Presearch Inc. The CD-ROM for the November deployment also included 7 minute 10 second means of statistics of flow and stress in both .mat file format and ASCII to allow a user to load and observe processed means of the entire deployment duration.

Both deployments were essentially problem free. On the May deployment, the redundancy of BASS was required for one sensor height while the others had excess redundancy. The November deployment had excess redundancy for all sensors. Six-of-eight thermistors on the May deployment and seven-of-eight thermistors on the November deployment produced



reliable data, confirmed during calibration, and these reliable thermistors were placed where measurements were needed. Redundancy in each case allowed essentially perfect measured data. For the November deployment, the tripod top was modified to allow tripod assembly inside the Rijkwaterstaat building, as in November in Scheveningen, the days are short and the weather is often inclement.

We would like to thank Ad Stolk and the Rijkwaterstaat for their help on land and aboard the M. V. Mitra. The M. V. Mitra is a very capable boat for deploying equipment. We thank Seaprobe for a couple hours of labor given to us when two people were needed for lifting and assembly of the tripod. This allowed WHOI to only send one person for the deployments thereby saving travel money.

Both data sets are clean and should help in understanding the wave and current forcing on the sediment during the NATO mine burial experiment.

| REPORT DOCUMENTATION PAGE | | | Form Approved OMB no. 0704-0188 |
|---|--|---|---|
| Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of management and budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. | | | |
| 1. AGENCY USE ONLY (Leave blank) | 2. REPORT DATE July 22, 1998 | 3. REPORT TYPE AND DATES COVERED 11/1/96-9/30/98 | |
| 4. TITLE AND SUBTITLE BASS Measurements of Bottom Currents and Stress in the North Sea | | 5. FUNDING NUMBERS N000014-97-1-0076 | |
| 6. AUTHOR(S) Fredrik T. Thwaites and Albert J. Williams | | | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Woods Hole Oceanographic Institution Applied Ocean Physics & Engineering Department Woods Hole, MA 02543-1053 | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | | 10. SPONSORING/MONITORING AGENCY REPORT NUMBER | |
| 11. SUPPLEMENTARY NOTES | | | |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited | | 12b. DISTRIBUTION CODE | |
| 13. ABSTRACT (Maximum 200 words) Two deployments of a Benthic Acoustic Stress Sensor (BASS) tripod were successfully made off Scheveningen. The Netherlands, in support of the NATO mine burial exercise. The spring systems test was a deployment from 1 May 1997 to 12 May 1997. The November deployment lasted from 11 November 1997 to 1 December 1997. The BASS tripod measured current, turbulence, waves and stress at three heights above bottom, temperature at seven heights, optical backscatter at five heights, and conductivity and pressure at one height above bottom. | | | |
| 14. SUBJECT TERMS bottom boundary layer, stress and currents | | 15. NUMBER OF PAGES 2 | |
| | | 16. PRICE CODE | |
| 17. SECURITY CLASSIFICATION OF REPORT Unlimited | 18. SECURITY CLASSIFICATION OF THIS PAGE Unlimited | 19. SECURITY CLASSIFICATION OF ABSTRACT Unlimited | 20. LIMITATION OF ABSTRACT Unlimited |



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July 23, 1998

Dr. Joseph Kravitz, Code 322GG
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Ballston Centre Tower One
800 N. Quincy Street
Arlington, VA 22217-5660

Dear Dr. Kravitz:

Enclosed is the final report for ONR grant N00014-97-1-0076, entitled "BASS Measurements of Bottom Currents and Stress in the North Sea," Principal Investigators: Fredrik T. Thwaites and Albert J. Williams.

Please let me know if you need any further information.

Sincerely,

A handwritten signature in cursive script, which appears to read "Fred Thwaites".

Fredrik T. Thwaites

cc: D. Rideout, Administrative Contracting Officer
Director, Naval Research Laboratory
Defense Technical Information Center ✓
M. Tavares, Grant and Contract Services
AOPE Department Office

FTW:sjb